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The Importance of Trust for Investment: Evidence from Venture Capital

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Abstract

We examine the effect of trust on financial investment and contracting decisions in a micro-economic environment where trust is exogenous. Using hand-collected data on European venture capital, we show that the Eurobarometer measure of trust among nations significantly affects investment decisions. This holds even after controlling for investor and company fixed effects, geographic distance, information and transaction costs. The national identity of venture capital firms' individual partners further contributes to the effect of trust. Education and work experience reduce the effect of trust but do not eliminate it. We also examine the relationship between trust and sophisticated contracts involving contingent control rights and find that, even after controlling for endogeneity, they are complements, not substitutes.

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"There are countries in Europe [...] where the most serious impediment to conducting business concerns on a large scale, is the rarity of persons who are supposed fit to be trusted with the receipt and expenditure of large sums of money." (John Stuart Mill)

Many economists intuitively recognize the importance of trust for economic transactions. Since Arrow's (1973) remark that "virtually every commercial transaction has within itself an element of trust" a small literature has analyzed the role of trust in economic decisions. For example, the work of Knack and Keefer (1997), Temple and Johnson (1998), and Zak and Knack (2001) establishes a positive relationship between trust and economic growth. More recently, Guiso, Sapienza and Zingales (2009) study the importance of trust for bilateral trade in goods, financial assets, and direct foreign investment, and Guiso, Sapienza and Zingales (2008) use Dutch and Italian data to establish an effect of trust on stock market participation.

In this paper we ask whether trust among nations affects the decision to make an investment across different countries. We also ask whether trust affects financial contracting and test whether trust and sophisticated contracts are substitutes or complements. We use a unique hand-collected dataset of European venture capital investments that allows us to study the effect of trust on financial investments and contracts using a powerful fixed-effect identification strategy.

Following the social capital literature, we define trust as a subjective belief about the likelihood that a potential trading partner will act honestly. It is important to distinguish two different types of trust. Generalized trust pertains to the preconceptions that people of one identifiable group have for people from another identifiable group. Personalized trust, instead, concerns the evolving relationship between two specific agents. In this paper we focus solely on generalized trust, so that we are concerned with what might be considered cursory beliefs, generalizations about others, even stereotypes.

Our first question is whether generalized trust affects the likelihood that a venture capital firm will invest in a start-up company. Prior to investing, there is a search process where entrepreneurs vie for the attention of venture capitalists, which in turn, have to incur time and costs in screening potential deals. We hypothesize that higher trust facilitates this matching process. Moreover, we conjecture that in addition to the country location of the venture capital firm, the nationality and personal characteristics of individual venture capital partners also affect the trust relationship with entrepreneurs, and therefore the likelihood of investing.

Our second question concerns the effect of trust on contracting. We identify two contrasting views. The 'substitutes' hypothesis argues that sophisticated contracts can be used to overcome low trust between investors and entrepreneurs. The 'complements' hypothesis argues that investors make use of sophisticated contracts only when there is sufficient trust. The difference between the two hypotheses concerns investors' beliefs about contract enforceability. Under the substitutes hypothesis, enforcement is taken for granted, and investors trade-off the costs and benefits of using contractual sophistication: they make use of sophisticated contracts only in the absence of trust. By contrast, under the complements hypothesis, two parties do not find worthwhile to write a sophisticated contract if they have low trust in their counterparts' nation.

We examine these two questions in the context of venture capital investment and

contracting decisions. Venture capital provides a particularly attractive testing ground for the effects of trust. On the one hand, one can reasonably argue that venture capitalists are sophisticated investors who would not act upon poorly-informed priors, and who are well positioned to exploit any arbitrage opportunities. On the other hand, one might counter that the financing of new companies inherently involves limited hard information, high (Knightian) uncertainty, and considerable scope for opportunistic behavior. Investors can therefore be more prone to rely on soft information, including social beliefs such as trust.

We use a hand-collected dataset of European venture capital investments made between 1998 and 2001 that contains investors and companies from 15 European countries, Norway, Switzerland, and the US. The dataset contains detailed information that cannot be obtained from any commercially available database, including the experience, education and nationality of each venture capital partner and some features of the contracts used for financing. One of the advantages of using microeconomic data is that reverse causality can be safely dismissed: trust among nation can affect venture capital investments, but the venture capital industry is clearly too small to influence the trust among nations.

Given the inherently subjective nature of trust, it is appropriate to measure it by surveying opinions. We adopt the approach of Guiso, Sapienza and Zingales (2009) of using the Eurobarometer survey data of bilateral trust among nations. This measure is based on how much citizens of one country say they trust the citizens of each other country (including their own).

We obtain three major findings. First, we find a positive effect of trust on investments. The effect is highly significant, both statistically and economically. A one percentage point increase in those who have high trust towards another country implies a seven percentage points increase in the probability that an investment is made. Our econometric specification considers all potential financing deals between investors and companies in our sample and asks which deals are actually realized. We account for any country-specific factors, such as regulation, taxes, institutions or country-specific investment opportunities using both investor fixed effects and company country fixed effects (company fixed effects in conditional logit models). The fixed effects also take care of any investor-specific effects, like quality or attitudes towards risk, as well as for systematic differences in company quality across countries. Therefore, the only variables that matter are those that measure *relative* (or *dyadic*) distances between the investor and the company. We distinguish two types of dyadic variables: those that vary at the country-pair level and those that vary at the individual investor-company pair level. The Eurobarometer measure of generalized trust is a country-dyadic variable. To isolate the effect of trust and eliminate alternative explanations we consider additional country-dyadic variables that control for differences in GDP, legal origin, language overlap, common borders, and the amount of information about foreign countries available in the business press. At the individual-dyadic level we control for the actual distance between the investor's and the company's town. We also control for the investor's propensity to invest in the company's stage and industry. To rule out alternative explanations we also use some novel controls, such as a measure of taste-based preferences that is based on the Eurovision song contest. We also provide several robustness checks, including alternative ways of measuring trust.

Second, we find that the effect of trusts is not confined to the organization as a whole, but extends to its decision-makers. Venture capital investors are partnerships owned by a small numbers of partners, who collectively decide on each investment. The inclusion of a

foreign partner from the company's country in a venture capital firm' team is associated with an increases in the likelihood of investment. An investment is also more likely if the foreign partner is from a third country that has a higher level of trust in the company's countrymen than does the venture firm's country. We are cautious on the causal interpretations of these results, however, since foreign partners could be hired in anticipation of making investments in that country. We also examine the importance of venture partners' experience and educational achievements. While the trust effect is lower when the partners have previous US work experience or are more educated, it nonetheless remains positive and significant. This suggests that education and experience mitigate but do not eliminate the effect of trust, even in the context of sophisticated professional investors.

Third, we find a positive and significant relationship between trust and contingent (i.e., sophisticated) contracts, consistent with the 'complements' hypothesis. This result holds true across a variety of contingent control rights, pertaining to the composition of the board of directors, the allocation of voting rights, the decision to liquidate the company's assets, and the ability to terminate the founders' employment contract. It continues to hold also when we control for potential selection effects. Because the complements hypothesis considers contract enforcement a driving force for the choice of contracts, we also examine how the effect of trust varies across legal enforcement regimes. Consistently with the complements hypotheses, we find that the effect of trust on contingent contracting is strongest when companies are located in countries with better legal enforcement.

We believe this paper is the first to examine the effect of generalized trust on corporate finance transactions. Our results are novel and relevant for several reasons. Identifying a trust effect in a micro-economic environment where alternative explanations can be controlled for is an important new step in establishing the importance of trust for investment decisions. Our results also suggest that generalized trust matters even in sophisticated financial transactions, where one might expect its effect to be eliminated by arbitrage. Moreover, the strength of this effect depends on individual investor characteristics. In particular, the result that the effect of trust is mitigated but not eliminated by the presence of partners with more experience or education suggests that trust is a fundamental determinant of investment decisions. The result that trust and contingent contracts are complements suggests that reliance on contracts need not be a solution to the problems that arise when investors question the enforceability of contracts in the first place. Generalized trust is therefore an important force not only for the likelihood that a transaction takes place, but also for shaping the contract which sustains the transaction.

The remainder of the paper is structured as follows. Section 1 reviews the relevant literature. Section 2 develops the paper's theoretical motivations. Section 3 explains our data and variables. In Section 4 we examine the effect of trust on investment formation and the role of individual partners' trust. Section 5 examines the effect of trust on contracts, and is followed by a conclusion.

1 Literature review

Our paper builds on, and contributes to a number of literatures. Most closely related is the literature on the effects of trust on financial decisions. Guiso, Sapienza and Zingales (2008) document that trust affects the willingness to invest money in shares, and thus contribute

to explaining limited participation in the stock market. We examine the decision to invest not by individuals who allocate their savings to liquid markets, but by sophisticated financial intermediaries that invest in illiquid companies.

By looking at cross-country investments, our paper also contributes to research on the 'home bias' investment puzzle (see Bae, Stulz and Tan (2008), Bottazzi, Pesenti, and van Wincoop (1996), French and Poterba (1991), and the survey by Karolyi and Stulz (2003)). Our analysis goes beyond previous work by examining not only whether transactions occur, but also how they are structured.[1] This allows us to address important questions about the role of trust for financial contracting that have not yet been studied.

Our paper makes a novel contribution to the venture capital literature. The paper addresses deal formation, an issue that has received surprisingly little attention so far. It introduces trust as an important factor in the generation and structuring of deals. Our analysis also builds on previous research that explains the contractual features observed in venture capital (see Bengtsson and Ravid (2009), Dessein (2005), Gompers (1997), Hellmann (1998, 2006), and Kaplan and Strömberg (2003)), and on papers that examine how legal systems influence venture capital contracts (see Bottazzi, Da Rin and Hellmann (2009), Cumming, Schmidt and Walz (2010), Kaplan, Martel and Strömberg (2007), and Lerner and Schoar (2005)). By including investor country fixed effects our analysis already absorbs all cross-country differences in legal systems, so that the effects of trust we document go beyond differences in legal systems.

More broadly, our study contributes to the literature on the economic effects of social capital (see Durlauf and Fafchamps (2006) and Guiso, Sapienza and Zingales (2006) for recent surveys). Some of this literature has focused on the importance of trust in environments where there is little legal enforcement. For example, Johnson, McMillan and Woodruff (2002) show that well-functioning courts are a prerequisite for entrepreneurs to trust and contract with external suppliers. Guiso, Sapienza, and Zingales (2004) show that social capital has a stronger effect on financial development where legal enforcement is low. Our results on contracting show that, even with good legal enforcement, investors do not rely on sophisticated contracting to overcome lack of trust. Ekinci, Kalemli-Ozcan, and Sorensen (2007) investigate the effect of social capital on financial integration among European regions, finding that regions where the level of confidence and trust is high are more financially integrated with each other. Also related to our paper are Bloom, Sadun, and van Reenen (2009), who analyze managerial practices at multinational companies around the world. They show that firms located in areas with higher trust tend to be in industries that rely on decentralization. Moreover, they find that trust facilitates delegation from the headquarters by improving cooperation. Finally, Guiso, Sapienza and Zingales (2009) establish the importance of trust for aggregate trade and foreign direct investment flows. We provide an analysis that is complementary yet distinct. Their analysis remains at the macro level, i.e., at the level of country pairs. We are able to analyze data at the level of individual investor-company pairs. This allows us to address a different set of questions, such as the importance of individual investor characteristics, or the effect of trust on contracts. It also permits us to control for a comprehensive set of alternative explanatory factors, and thus to better isolate the role of trust. Because we focus on a

[1] Also related to our paper is Giannetti and Yafeh (2008), who study the effect of culture on the syndicated loan market. They find that banks offer smaller and more expensive loans to borrowers located in culturally more distant countries.

small segment of the economy, we can also safely eliminate any concerns about reverse causality. We can thus bypass all the difficulties of having to find appropriate instruments for the determinants of trust.

2 Theoretical motivation

2.1 What is trust?

In this paper we use a commonly accepted definition of trust, as "the subjective probability with which an agent assesses that another agent or group of agents will perform a particular action."[2] Two different types of trust are relevant for our study: personalized and generalized trust. Personalized trust is a set of beliefs that one person has about the behavior of another specific person. It is based on a repeated interaction between the two individuals and can thus be thought of as an informed belief. Generalized trust, by contrast, is a set of beliefs about the behavior of a random member of an identifiable group of individuals. Durlauf and Fafchamps (2006) argue that "the main difference between the two is that, for each pair of newly matched agents, the former takes time and effort to establish, while the latter is instantaneous." From an economics perspective, the difference between generalized and personalized trust can be thought of as the difference between poorly-informed prior beliefs versus well-informed posterior beliefs. From an econometric perspective, a key difference is that generalized trust is exogenous to the specific micro-economic transaction, whereas personalized trust is inherently endogenous.

This distinction is particularly relevant in the context of venture capital. A venture capitalist and an entrepreneur typically do not know each other before contracting. After investing, they work closely together (Hellmann and Puri (2002)). At the beginning of their relationship, the (generalized) trust between a potential venture capitalist investor and an entrepreneur is exogenous. Once their relationship has developed, trust becomes personalized and endogenous to the numerous decisions and interactions made along the way. In our study we focus solely on generalized trust.[3]

2.2 Why should trust affect venture capital investments?

Our first hypothesis is that higher generalized trust increases the likelihood that a venture capitalist invests in an entrepreneur's company. The underlying logic is that trust helps the search process through which the two parties in the transaction find each other and make the investment decision. For example, a venture capital firm with low (generalized) trust of an entrepreneur may never take much interest in her business plan. Indeed, venture capitalists seriously consider only a small fraction of all business plans proposed to them (Tyebjee and Bruno (1984)). Similarly, an entrepreneur who has low (generalized)

[2] A large literature which spans several social sciences examines the concept of trust and its effects on human behavior. Guiso, Sapienza and Zingales (2006), Möllering (2006), and Nooteboom (2002) review this literature from different angles.

[3] Another conceptual distinction is between trusting and trustworthiness (see Glaeser et al. (2000)). Trusting describes a focal person's beliefs about others, whereas trustworthiness describes other's beliefs about the focal person. In our context, the distinction between trusting and trustworthiness corresponds to the distinction between the venture capitalists' trust of entrepreneurs and entrepreneurs' trust of venture capitalists.

trust of a venture capital firm may never bother to initiate contact. Indeed, entrepreneurs typically contact only a subset of all the venture capitalists that are active at any point in time. We therefore submit that higher generalized trust increases the probability that a pair of venture capitalist and entrepreneur generate a match, i.e., that they progress from the initial state of non-acquainted potential partners all the way to an actual investment.[4]

There are three possible objections to our hypothesis. The first is that there should be no systematic differences in how different people trust a set of individuals. Indeed, if agents have common priors and update them based on all the available information, no systematic differences should persist at the level of generalized trust, which, by construction, excludes private information. A problem with this line of argument is that it doesn't seem to be supported by the data. In Section 3.4.1 we show that trust differentials are both pervasive and remarkably persistent. Moreover, subjective beliefs can be thought of as non-common priors (Morris (1995)). Their influence can persist when there is limited information exchange and limited updating of beliefs. These conditions are likely to hold in illiquid and opaque markets such as venture capital.[5]

A second possible objection to our hypothesis is that even if trust differences persist, they should not matter, because sophisticated investors can undo them by taking advantage of arbitrage opportunities. This argument seems applicable to liquid and transparent markets, but is less forceful in venture capital, where arbitrage requires a long horizon. Moreover, lack of trust can be self-fulfilling, i.e., it can be explained by the existence of multiple equilibria (Greif (1993)). In the low equilibrium arbitrage is infeasible because the counter-party also has low trust.

A third objection is that the probability that two partners engage in an economic transaction depends on their social networks, an argument often made by sociologists (e.g., Granovetter (1995)). In the context of venture capital, it seems plausible that social networks facilitate the process of search (see Sorenson and Stuart (2001) and Hochberg et al. (2007)). From an economist's perspective, a problem with this objection is that social networks themselves are endogenously formed in a way that reflects the patterns of trust among nations. They can facilitate the matching of entrepreneurs and venture capitalists, but should not be viewed as the ultimate drivers of this process. We therefore view social networks not as an alternative hypothesis, but one of the channels through which trust can affect the formation of venture capital investments.

We also conjecture that the identity of individual decision makers within the venture capital organization matters for investments. Venture capital is an appropriate context to put this conjecture to test. This is because the decision to invest is made not by a single individual but by the whole set of partners in the venture capital firm, who have equity in the firm and meet periodically to make investment decisions (Sahlman (1990)). Further, we look at whether individual partners' experience or education affects investment decisions (see Bottazzi, Da Rin, and Hellmann (2008)). We conjecture that

[4] Nooteboom (2000) notes that in times of radical innovation the importance of tacit knowledge makes the codification needed for enforceable contracts difficult. In venture capital the conditions for trust to matter are naturally met, as a venture capital investment exposes both parties to outcome uncertainty, and there are numerous possibilities for opportunistic behavior within a venture capital relationship (Sahlman (1990)).

[5] Sociologists frequently argue that in situations where agents have little objective information, social cues (such as generalized trust) become an important basis for decision making (see Podolny (1994)).

deeper experience (measured by US work experience) or higher educational achievements could mitigate the effect of trust, since partners with better experience or more education may become more competent in screening business plans and entrepreneurial teams, and might therefore be less influenced by broader societal belief patters such as generalized trust.

2.3 How does trust affect contracts?

Mainstream contract theory extensively analyzes financial contracts (Hart (2001)), but rarely considers how trust should affect the design of contracts.[6] While there has been virtually no theorizing about generalized trust and contracts, there are two opposite views of the relationships between personalized trust and contracts.

Greif (1993, 2006), in the context of medieval trading, and McMillan and Woodruff (2002), in the context of post-socialist economies, suggest that personalized trust and contractual sophistication are substitutes. Their argument is that long-term relationships become more important when the legal system makes formal contracting difficult. The argument for substitutes has also been developed in the management literature, often as a critique to the assumption of opportunistic behavior in economic transactions used in Williamson (1985). The substitutes hypothesis assumes that contracts are an effective safeguard against opportunistic behavior, but that contracts are costly to write and/or renegotiate. Trust among contracting parties can be a less expensive safeguard against opportunistic behavior, so that one would expect less detailed contracts when trust is high (Lane (1998)). In an economics context, Spier (1992) argues that contractual incompleteness can be a signal of the offering party's unobservable quality. Formal contracts can then erode personalized trust, and so deter agents from making relation-specific investments (see Fehr and Gächter (2002)).

The alternative view is that personalized trust and contractual safeguards are complements. This originates from observing that contracts can be an ineffective safeguard when trust among parties is low (Nooteboom (2002)). Given the costs of contracting, two parties will only find it worthwhile to write a sophisticated contract if they can trust that each party will abide by it. With low trust the contracting parties prefer to avoid the cost of writing a sophisticated contract, and the risk of remaining entangled in uncertain litigation; therefore they use a simpler contract.[7]

We apply these alternative views to our context, namely the relationship between generalized trust and contracts. Here the fundamental difference between the two hypotheses is that under the substitutes hypothesis, partners may or may not trust each other, but they believe that contracts will be enforced. Hence they resort to (costly) sophisticated contracts only in situations of low trust in their counterpart. Under the complements hypothesis, however, irrespective of the level of personalized trust among partners, a suspicion that contractual safeguards will not be enforced (i.e., low generalized trust) generates a preference for simpler contracts. Hence the main difference between

[6] See Casadesus-Masanell (2004), Chen (2000), and Francois and Zabojnik (2005) for some exceptions.

[7] As suggested by Woolthuis, Hillebrand, and Nooteboom (2002), 'trust may be needed prior to setting up a contract to ensure that the time and effort invested in the contract, which can be seen as a relation-specific investment, is not likely to be wasted.' Poppo and Zenger (2002) provide evidence from the outsourcing service industry suggesting that trust and contracts can be complements.

the substitutes and complements hypotheses concerns the enforceability of contracts. The substitutes hypothesis assumes that the level of trust is sufficiently high for the parties to believe in the validity of contracts, and the need for sophisticated contracts arises when personalized trust is low. The complements hypothesis, instead, assumes that the benefits of sophisticated contracts can only be realized in case of high generalized trust, irrespective of the level of personalized trust.[8]

What are the contractual dimensions that matter in venture capital? The theoretical work of Dessein (2005) and Hellmann (2006) explains how simple control structures can give too much power either to the investor or the entrepreneur, and how control structures which are contingent on firm performance can achieve more efficient outcomes. The empirical work of Kaplan and Strömberg (2003) documents the pervasive use of contingent control rights in US venture capital contracts. The prior literature therefore suggests that contingent control rights are a useful testing ground for studying the relationships between trust and contracts. Under the substitutes hypothesis we would expect less contingent contracting in high trust situations, based on the notion that such control rights are unnecessary due to high trust. Under the complements hypothesis we would expect more contingent contracting in high trust situation, based on the notion that trust is a prerequisite for the enforcement of such contracts.

3 Data and variables

In this section we describe our data sources and motivate our variables, which are defined in Table 1. Table 2 provides descriptive statistics for all dependent and independent variables. Table 3 reports pairwise correlations among the country-dyadic dependent variables.

3.1 Data sources

Our data comes from a variety of sources. The main data are gathered through a survey of 750 venture capital firms in 15 European countries: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, and the UK. Venture firms were included in our sample if they : (i) were full members of the European Venture Capital Association (EVCA) or of a national venture capital organization in 2001, (ii) were actively engaged in venture capital and (iii) were still in operations in 2002. The survey asked detailed information on all first rounds of venture capital investments made between January 1998 and December 2001, as well as information on the venture firm's partners.[9] We exclude buyout investments.

[8] The recent work by Hart and Moore (2008) provides a rationalization of the hypothesis of complementarity between trust and contracts, even if the authors do not explicitly address the question of trust. They show that if agents use contracts as reference points for their selfish interests, then simple contracts have the benefit of creating less mismatch of entitlement feelings, which in their model prevents ex-post opportunistic behavior. A natural interpretation of their model is to associate mismatched feelings of entitlement with low trust among partners. It follows that the benefit of simple contracts, in terms of creating more clarity, is larger in situations of low trust, predicting a positive relationship between trust and sophisticated contracting.

[9] We use the term 'firm' for the investor (i.e., the venture capital firm) and the term 'company' for the company that receives the venture capital financing.

We received 108 usable responses, which we cross-checked using investor and company websites, commercial databases (Amadeus, Worldscope, and VenturExpert), and trade publications. Our data represent a comprehensive cross-section which provides a good coverage of all countries, with an overall response rate of nearly 16%, a rate significantly larger than for comparable surveys of industrial firms (see Graham and Harvey (2001)). No single country dominates the sample, and no country is left out. Our data are not dominated by a few respondents: the largest venture capital firm accounts for only 5% of the observations, and the largest five for only 16%. Bottazzi, Da Rin and Hellmann (2008, 2009) provide a more extensive discussion of the data, and report additional tests that confirm the representativeness of the sample.

The main independent variable is the trust from citizens of one country towards citizens of another country. This variable is collected by Eurostat through a yearly survey of citizens of all European countries. We report in Table 1 the sources for all other independent variables.

3.2 Unit of observation

We adopt two units of observation. In the first part of the analysis, we focus on the decision to invest, i.e., whether to make a deal or not. For this we construct the sample of all potential deals, consisting of every possible pairing between the 108 investors and their 1,216 portfolio companies. Portfolio companies are located in one of the 15 European countries venture investors are from; they are also located in Norway, Switzerland, and the US, since Eurostat collects data on trust in citizens of those countries. The unit of observation is the individual investor-company pair (as in Sørensen (2007)). For each company we consider that it could in principle be financed by any of the respondent venture firms. We take into account that some pairs are not feasible because the venture capitalist began operations after the date the company was seeking an investment. Our potential deals dataset includes 107,390 potential deals.

We analyze investment decisions in a discrete choice framework where investors choose among companies as investment alternatives. In addition to a logit model, we use a conditional logit model where, in the terminology of McFadden (1984), we think of investors as cases and companies as the alternatives. This approach takes the investors' perspective which corresponds to our survey design. In this set-up the trust variable measures how people from the investor's country trust people from the company's country. While investors chose companies, those companies also choose to accept the investments. We therefore also estimate our model treating companies as cases and investors as alternatives, in which case the trust variable measures how people from the company's country trust people from the investor's country.

One limitation of our analysis is that to be included in our sample, a company must have received funding from at least one investor. We clearly cannot observe all the 'marginal' companies that never received any funding from any venture capitalist.[10] Our analysis therefore examines whether trust affects investment decisions among all 'infra-marginal' companies, excluding any effect that trust may have on the marginal companies. It is possible that higher levels of trust increase the size of the venture capital market. Indeed,

[10] Note that even if we did, their observations would fall out of the regression by the time we consider the conditional logit model.

Figure 1 shows a positive correlation of 0.51 (significant at the 6% confidence level) between the size of the venture capital market, measured by aggregate investment (relative to per-capita GDP), and the level of trust received by each country. Therefore it is likely that our analysis understates the total effect of trust.

In the second part of the analysis we focus on the effect of trust on venture capital contracts. For this part of the analysis we use what we call the realized deals sample, which consists of all the investments that we observe in our data. Our realized deals sample contains a total of 1,277 deals, into 1,216 companies, made by 108 venture capital firms.[11]

3.3 Dependent variables

In the first part of the analysis we ask whether a particular investor finances a particular company. The dependent variable is DEAL, which is a dummy variable that takes the value 1 if the venture capital firm has invested in a particular company and 0 otherwise.

In the second part of the analysis we address the relation between trust and contracts. For this we construct five dependent variables that capture the extent to which sophisticated contracting is used in each deal. We consider four types of contingent control rights, whereby the investor is allowed to take certain actions in case the company fails to meet specified performance targets. We look at the right to take control of the board of directors, to obtain voting majority, to liquidate the company, and to fire ('terminate') the founder/CEO. The correlation coefficients among the contingent control variables ranges from 0.24 to 0.51. We also build a summary measure of contingent control rights by summing over the four contingent control dummies. This variable takes a value between 0 and 4.

3.4 Independent variables

3.4.1 Country-dyad level

Our analysis is based on the Eurobarometer measures of trust, that was previously used (and described in detail) by Guiso, Sapienza and Zingales (2009). Eurobarometer is a large survey about the social and political attitudes of citizens of the European Union that is executed yearly for the European Commission since 1970. Our trust measure is derived from the Eurobarometer survey waves from 1990 to 1996.[12]

How reliable is this measure of trust? First, the trust measure reflects patterns one would intuitively expect: People typically have the highest trust for their own country; Scandinavian countries receive high trust, and are also more trusting; the British trust the French less than other nations; and the French are happy to reciprocate. Second, the Eurobarometer trust measure has a strong correlation with the World Values Survey (WVS) measure of trust, which has been used by several studies (e.g., Knack and Keefer

[11] There are more deals than companies because 54 companies receive financing from more than one of our venture investors.

[12] We do not collect trust data directly from our survey respondents, since such a measure would be endogenous to their investment experience. The Eurobarometer measure, on the contrary, is clearly exogenous to the investments made by venture capitalists.

(1997)). The correlation coefficient is 0.72, significant at the 1% level.[13] This strong correlation suggests a reliable measurement of trust that does not depend on the details of how the surveys were implemented. We also notice that trust among nations is remarkably persistent over time: The correlation coefficients across Eurobarometer waves is often over 90% and always above 84%.

The remaining country-dyadic variables are meant to capture other factors that should affect the investment decision, or that constitute potentially alternative explanations. We employ three variables that are standard controls in the literature on geography and trade: whether an investor/company pair is either located in the same country, or in neighboring countries (sharing a common border), and how economically far away are two countries, using the difference of the logarithm-transformed per-capita GDP.

We then consider the role of search costs by looking at the amount of information on each country that is reported in another country's main business newspaper. We also consider two country-dyadic variables that capture transaction costs: the similarity of languages and of legal systems.

To capture taste-based preferences, we build two novel proxy measures. The first is the percentage of nights spent at hotels for holiday purposes by citizens of country i in country j, averaged over the period from 1998 to 2001. The second is a normalized measure of the votes from citizens of country i to the song of country j in the Eurovision Song Contest, averaged over the period from 1993 to 2001. To account for the intensity of economic relationships between countries we use two standard measures from the trade literature: the share of exports and of foreign direct investments from country i into country j (in billions of dollars), averaged over the period from 1998 to 2001.

3.4.2 Other independent variables

Our other independent variables vary at different levels. Three variables are measured at the level of the investor-company pair. First, we compute the log-transformed kilometric distance between the investor's and company's cities using the geodetic formula.[14] Second, we compute two measures to capture an investor's propensity to make a deal in a company's industry and stage of financing: the share of investments of a venture capital firm in the same industry in which the company operates, and the share of investments of a venture capital firm in the same stage at which the company is receiving financing.

We consider four company characteristics: its industry of operations, whether the company seeks early stage (seed or start-up) or late stage (expansion and bridge) financing, and the quality of the company's legal system, measured by the quality of enforcement of legal rules described in La Porta et al. (1998), and by the level of the procedural complexity described in Djankov et al. (2002).

We also include different sets of fixed effects: a set of 108 dummy variables, one for each investor, a set of dummies for investor country, and a set of dummies for company

[13] The WVS survey question is *"Generally speaking, would you say that most people can be trusted, or that you can't be too careful in dealing with people?"* The WVS therefore only measures how trusting citizens of one country are, rather than bilateral country-dyadic trust. Therefore, we compute the correlation coefficient using the Eurobarometer trust measure for citizens of the same country.

[14] Such precision allows us to avoid some of the measurement problems that have plagued the literature on trade and geography, which typically uses a much coarser measure—the distance between capital cities (see Head and Mayer (2010)).

country.

Finally, we use some variables that capture the effect of individual partners within the venture firm. First, we consider whether the investor has at least one partner of the same nationality of a company. Second, we compute the difference between the average trust of the investor's partners in a company's country citizens and the trust of the investor's country in that company's country. Third, we compute two indicators of the education and professional experience of a venture firm's partners: whether the venture firm has partners with US work experience and whether the venture firm has partners with a doctoral degree.

4 The role of trust for deal formation

4.1 Methodology

We begin by asking what factors influence a venture capitalist's decision to invest in a company. We estimate the probability that a specific venture capitalist invests in a specific company with the following econometric model:

$$DEAL_p = \alpha + X_n'\beta^n + X_p'\beta^p + X_i'\beta^i + X_c'\beta^c + \varepsilon_p \tag{1}$$

Let i index investors and c index companies, let $p = (i, c)$ index investor-company pairs, and let n index investor-company country dyads. The dependent variable is DEAL, which is a dummy variable for whether investor i finances company c. The intercept term is denoted by α. The vector X_n' represents variables that vary at the country-dyadic level, namely TRUST, FOREIGN–DEAL, COMMON-BORDER, INFORMATION, GDP–DIFFERENCE, LANGUAGE-OVERLAP, and LEGAL–DIFFERENCE. The vector X_p' represents variables that vary at the investor-company pair level, namely DISTANCE, INDUSTRY–FIT and STAGE–FIT. The vectors X_i' and X_c' represent variables that vary across investors and companies, respectively; we discuss them below. Since the key independent variables vary at the level of the country dyad (n), we cluster the standard errors of ε_p at the level of the country dyad. Clustering also implies the use of robust standard errors.

To estimate the probability that a deal occurs, we use a logit model (our results do not change when we use a probit). To control for investor characteristics we can afford to use a complete set of investor fixed effects, i.e., 108 dummies. This is clearly the most powerful way of controlling for any investor-specific effects, including the investor's nationality. The investor fixed effects also take care of any systematic differences across investors, including quality and risk aversion. To control for company characteristics, we use STAGE and INDUSTRY. In addition, we use company country fixed effects. This means that we control for the overall level of trustworthiness (e.g., on average the Swedes are trusted more than the Spaniards). As a consequence our trust variables always reflect *relative trust* (e.g., relative to the average level of trust, the Spaniards are more trusted by the French than by the British). Moreover, the company country fixed effects control for any country-specific effects, such as investment opportunities, the legal and institutional environment, and investor friendliness. The coefficient of trust therefore captures how deviations from the average level of trust towards the company's country affect the likelihood that an investor will make a deal with a company located in that country. With over one thousand companies in our sample we cannot add one fixed effect for every company. However, to

control even more finely for company characteristics, we also consider a conditional logit model. This semi-parametric specification effectively includes both investor and company fixed effects, thus providing the richest possible set of controls.

We want to distinguish trust from home bias. There are many reasons why investors may prefer to invest in a domestic company (Karolyi and Stulz (2003)). While trust may be one of those reasons—indeed people tend to express the highest trust for their own countrymen—we not do want to rely a preference for domestic deals to identify the effect of trust. We therefore separately control for whether a company is located in the same or different country than the investor, as captured by the FOREIGN-DEAL dummy. Thus our estimate of the trust effect is conservative, as we eliminate one important channel through which trust may affect investments.

4.2 Main results

The estimates from the simple and conditional logit models are reported in Table 4. In column *(i)* we report the results of the logit estimation without any country-dyadic controls (except those related to geography, namely foreign deal and common border); in column *(ii)* we include all the country-dyadic controls. In columns *(iii)* and *(iv)* we report the results from the conditional logit model, first without and then with country-dyadic controls.

We find that the coefficient on TRUST is positive and significant at the 1% level across all specifications. This clearly supports the hypothesis that trust affects the likelihood of making an investment. In addition to being statistically significant, the estimated coefficient measures an economically important effect. We focus on column *(ii)* in Table 4, which is our main specification; results for the other specifications are very similar. The logit regression estimates the odds ratio, defined as the ratio of the probability of success to the probability of failure of the event (in our case of a deal being made). Consider a 1 point increase in the percentage of people that express high trust. An example (drawn near the median of the trust distribution) is that 15.3% of Spaniards have high trust for Germans, and 16.3% of Dutch have high trust for Germans. Such a one percentage point increase generates a 7.0% increase in the probability of reaching a deal.[15] Another approach would be to consider moving from the 25th to the 75th percentile of the trust distribution. For example, 10.5% of British people highly trust Germans, which is at the 25th percentile, while 24.8% of Norwegians highly trust Germans, which is at the 75th percentile. Moving from the 25th to the 75th percentile of the trust distribution then corresponds to a 105% increase in probability of reaching a deal—in other words, it more than doubles it.

Table 4 contains several other results. Geographic distance is very important. The coefficient for DISTANCE has a negative sign and is statistically highly significant in all specifications. This confirms the notion that venture capital is a highly localized activity. The coefficient for FOREIGN–DEAL is negative and statistically significant in all four specifications. The coefficient for COMMON–BORDER is insignificant. The coefficient of INFORMATION is positive and statistically highly significant. This result suggests that search costs, broadly defined, matter. The result is even more surprising given the fact that our measure is only a rough proxy for differences in the amount of informa-

[15] At low levels of predicted probability, the marginal increase in probability is very close to the increase in the odds ratio given by the estimated coefficient.

tion available to investors. GDP–DIFFERENCE is negative and statistically significant, LANGUAGE–OVERLAP is positive, and LEGAL–DIFFERENCE is negative but never significant. Throughout all regressions we find that INDUSTRY–FIT and STAGE–FIT have a highly significant effect, with an (expected) positive sign. This shows that specialization is an important aspect of the venture capital market: companies need to fit into investors' strategic preferences in order to attract investments.

4.3 Trust and individual partners

4.3.1 The role of partner nationality

So far our analysis measures trust using the venture capital firm's headquarter location, finding that it holds a relevant effect on facilitating financial transactions. Our next step is to ask whether this effect is influenced by the presence of venture partners of different nationality. Venture capital firms are typically small partnerships where the decision-making process is confined within the partners (or senior management in case of bank, corporate, or public venture firms). We thus ask whether the individual decision maker's trust affects the firm's investments.

A useful aspect of our data is that we have information on the nationality of each venture capital partner. We therefore examine whether having a partner with a certain nationality changes a venture capital firm's likelihood of making an investment. To examine the importance of partner nationality we look at two possible effects. First, we consider whether any of the partners of the venture capital firm have the same nationality as the company. The hypothesis is that having a partner from the same country of the company increases the likelihood of investing. For example, since the British have low trust in the French, we ask whether a British firm with a French partner is more likely to invest in a French company than a British firm without French partners. The PARTNER–MATCH variable captures this effect.

To further isolate the effect of trust, we also consider a second measure that we call PARTNER–TRUST. We build it by averaging the trust scores of all of the venture firm's partners, based on their country of birth. We then subtract TRUST from this average. PARTNER–TRUST measures the *differential* trust of the individual venture capitalists within the firm. To return to our example, suppose that the British venture capital firm had no French partner, but it had an Italian partner. Italians have higher trust for the French than the British. The PARTNER–TRUST measures this increase in trust. It thus allows us to examine whether the presence of an Italian partner is associated with a higher likelihood that the British venture capital firm makes an investment in the French firm.

While generalized trust is clearly exogenous to the venture firm's investment decisions, the choice of partners might be endogenous. A venture capital firm that plans to make investments in a certain country might hire a partner from that country. Therefore, when we use these variables we only aim to establish correlation, not causation.

Table 5 reports the results with these two additional variables. For each variable, we estimate the two specifications of Table 4 that include all dyadic variables. For space's sake we focus on these two specifications also in the rest of this section; all our results are qualitatively the same when we omit the country-dyadic variables. The results of table 5 show that the composition of partners inside the venture capital firm indeed matters for investment decisions. Columns *(i)* and *(ii)* show that PARTNER–MATCH is positive

and statistically highly significant, indicating that the presence of a foreign partner with the same nationality as the company is associated with a higher likelihood of making the investment. The presence of a partner from the company's country corresponds to a 7% higher odds ratio. Columns *(iii)* and *(iv)* shows that the same holds for PARTNER–TRUST. Here as well we find a positive and statistically highly significant coefficient, suggesting that the national composition of partners is associated with a higher likelihood of a deal. The economic effect of PARTNER–TRUST is also sizeable. An increase of one percentage point in PARTNERS–TRUST corresponds to an odds ratio that is about 8.8% higher, depending on the model. We also notice that the statistical and economic significance of the main trust variable is barely affected by the inclusion of these additional partner measures.

4.3.2 The role of education and experience

The detail of our data on individual partners allows us to gain additional insights on how other partner characteristics affect the role of trust. One might argue that the role of trust should disappear when investors are sufficiently sophisticated. To test this conjecture, we exploit differences among individual partners to examine whether their experience or education achievements affect the influence of trust on deal formation. Since our empirical model relies on the use of investor fixed effect, we cannot just include measures of experience or education. Instead, we use interactions between trust and such measures to tease out the *differential* trust effect.

Prior work by Kaplan, Martell and Strömberg (2007) suggests that having work experience in the US exposes European venture partners to best management practice, and to a culture of entrepreneurship that could facilitate the evaluation of business projects. In addition, we conjecture that obtaining a PhD as the highest educational achievement might be correlated with sophisticated reasoning. Table 6 reports the results of two sets of regressions, one for US experience and one for PhD education. For brevity's sake, we only report the coefficient for trust, interacted with a dummy for each of the two variables. The results show that US experience and PhD education reduce the effect of trust in a statistically significant manner. At the same time this reduction leaves a strong and significant trust effect even for the most experienced and educated partners.

These results give us additional insights into the importance of trust for investment. The fact that we continue to find a significant effect of trust when looking at variation across partners within firms provides evidence that trust operates at the level of individual decision makers. Moreover, the fact that experience and education reduce the influence of trust but do not wipe it out, suggests that trust has an effect even when decision are made by sophisticated professional investors.

4.4 Alternative measures of trust

Since our trust variable measures the trust of an average citizen, a potential concern is that it doesn't reflect the beliefs of venture capitalists. That is, the average citizen's trust may not apply to the socio-economic group venture capitalists belong to.[16] We therefore

[16] For example, while it may be true that the French hardly enjoy a high level of trust in the pubs of East London, what we care about is what trust they enjoy in the wine bars of the City of London.

recalculate our measure of trust for a subset of the population that is likely to correspond to the average venture capitalist. Since the Eurobarometer includes some information on the socioeconomic characteristics of respondents, we restrict our attention to those whose profile broadly corresponds to that of professionals. More precisely, we consider respondents who are in the upper half of the income distribution, were at least 20 years old when finishing their last studies (implying they have at least a bachelor degree), and are between 34 and 50 years old—an interval that covers one standard deviation above and below the mean age of the venture partners in our sample. We find that this additional measure of the trust variable is highly correlated with the main measure of trust (the correlation coefficient is 0.99), suggesting that differences in the socioeconomic group have little effect on trust. When we use this additional measure, the results, for both trust and the other variables, remain unaffected.

Our analysis so far focuses on the trust of the investor's country in the company's country. This reflects the notion that investors are those who decide whether to make a deal or not. However, entrepreneurs have to accept their investors, too. We then consider trust also from the company's perspective. These two measures contain strong elements of reciprocity and are highly correlated. Including both measures in the same regression would thus be meaningless. Instead, we re-estimate our regressions substituting 'investor' trust with 'company' trust. The information variable is our only other asymmetric variable, so we also rebuild it from the company's perspective. All of our results remain qualitatively intact when we adopt the company's perspective.[17]

4.5 Alternative explanations

A challenge for the entire research on trust is to what extent one can distinguish the effect of trust from other explanations. The base model, beyond using investor and company country fixed effects, already controls for three important alternative explanations. First, we control for geographic factors: the distance between each individual investor and each individual company, whether a deal is domestic, the existence of common borders, and the difference in GDP per capita. Second, we control for search costs, with the information variable. Third, we control for transactions costs, since language overlap and commonality of legal systems are likely to affect the costs of closing a deal. We now look at other potential explanations.

There is a long tradition in economics of distinguishing beliefs from preferences, dating back at least to the seminal work of Becker (1957) and Arrow (1973). In our context, our concern is to ensure that our result on trust is not driven by investor's tastes. We need to distinguish how much investors 'trust' other countries, based on beliefs, and how much investors 'like' other countries, based on taste. Liking is a subjective concept that is difficult to measure, so we consider two different proxies. First, we use relative tourism flows, since tourism flows reflect taste-based preferences among nations. This is admittedly a noisy measure, but it has the advantage of being a bilateral measure. Moreover, the company country fixed effects remove any common factors that affect tourism (e.g., the fact that Italy has more tourist attractions than Denmark). Second, we exploit data

[17] Since both parties have to agree to the deal, it may be that what matters is the lower (or possibly higher) of the two trust levels. We re-estimated all of our regressions using the lower (and also the higher) between 'investor' and 'company' trust, finding again that all our results continue to hold.

from the Eurovision Song Contest, a popular and uniquely European event, to construct a measure of taste-based preferences that varies within country pairs. Eurovision is an annual televised music contest among European countries, where each country is allowed to send one candidate. Viewers from around Europe rank the contestants from other countries on a scale from 0 to 12. While the absolute ranking presumably depends on contestants' quality, prior research has argued that the relative vote ranking reflect patterns of how much people from one European country like others (Clerides and Stengos (2006), Fenn et al. (2006)). As in Felbermayr and Toubal (2007), we control for song quality through a comprehensive set of song-specific fixed effects.

Columns *(i)* to *(iv)* of Table 7 report the results of adding the TOURISM and EUROVISION taste proxies to our logit and conditional specifications with dyadic variables. We find that the effect of trust is not affected by their inclusion, both in statistical and economic terms. The tourism variable has a negative and statistically significant effect. The Eurovision variable is statistically not significant. Thus our main results about trust do not appear to be driven by taste-based preferences.

Another question is to what extent the relationship between trust and venture investments differs from the relationship between trust and trade, identified by Guiso, Sapienza and Zingales (2009). To examine this we include measures of trade or foreign direct investments (FDI) as additional controls. One reason for doing this is that existing patterns of trade may facilitate venture investments. Another reason is to test whether trust matters *more* for venture investment than for general trade flows. However, there is also one reason not to include trade. Guiso, Sapienza and Zingales (2009) establish a positive relationship between trust and aggregate trade flows. Including trade in our equation therefore introduces multicollinearity, i.e., the model may be over-specified. With this caveat, columns *(v)* and *(viii)* of Table 7 report the results of adding EXPORTS and FDI to to our logit and conditional specifications with dyadic variables. As expected, we find that both EXPORTS and FDI are positive and statistically significant. However, their inclusion does not affect the significance and magnitude of the trust variable. This suggests that, even after possibly over-specifying the model, we continue to find that trust matters. In fact, the evidence suggests that trust matters more for venture capital investment than for aggregate trade and FDI flows.

4.6 Foreign subsamples

The Eurobarometer data contains a bilateral measure of trust not only for the foreign countries but also for the domestic country. Unlike Guiso, Sapienza and Zingales (2009) who focus on exports and FDI, we can make use of the domestic trust data. Our regressions already include a control dummy for whether the investor and company are from the same country or not. To make our results more comparable to the prior literature, we performed some additional analysis on foreign subsamples. There are multiple possible ways of defining such subsamples. We focus on two definitions that we call the broad and the narrow foreign subsample. The 'broad' foreign subsample excludes investors that only invest domestically. It consists of 49 investors and 1,216 companies. This gives us a subsample where each company is fundable by all its domestic VCs and by those foreign venture firms that invest abroad; it therefore contains some (potential and realized)

domestic deals—those by venture firms that invest beyond their home country.[18] The 'narrow' foreign subsample excludes all domestic deals, potential or realized. It only includes venture firms that invest abroad, and those companies that have at least one foreign investor. It consists of 49 investors and 223 companies. The narrow sample most resembles the prior literature, but also has several disadvantages. It throws away a lot of relevant information, thus reducing our statistical power, and it alters the economic interpretation of the logit model which now estimates choices from an artificially constrained choice set.

In Table 8 we report results corresponding to the logit and conditional logit specifications with dyadic variables of Table 4. Columns (i) and (ii) show the results for the logit and conditional logit model for the broad foreign subsample, which excludes all venture capital firms that only invest domestically. Columns (iii) and (iv) show the results for the narrow foreign subsample, which includes only those potential deals that involve a foreign investment. The coefficients of trust retain their size and significance across all of these specifications.[19]

4.7 Further robustness

In defining the sample of potential deals, we deliberately refrain from imposing restrictions on the set of admissible potential deals, other than requiring that the venture capital firm was in existence at the time that the company was seeking funding. This means that we let the econometric model determine what matches are more or less likely. An alternative approach is to impose additional restrictions on the set of admissible potential deals, making assumptions about which pairs have a zero probability of resulting in a deal. While we prefer not to make such assumptions in the main model, we now impose some additional restrictions to ensure that our results are not driven by our sample construction criteria.

We observe that some venture capital firms in our sample never invest in certain sectors, or never invest in companies at certain stages of development. We therefore exclude the potential deals where the investor never invests in a company's sector or stage. We find that our results are unaffected by this restriction.[20]

Our data contains investors from 15 countries but companies from 18 countries. To make sure that the inclusion of the three non-EU countries (Norway, Switzerland, and the US) does not affect any of the results, we rerun all of our regressions eliminating the companies from these countries. We find that this does not affect any of our results.

The construction of our sample involves multiple observations for the same company. One concern is the standard independence assumption of the logit model may be violated in this context.[21] We therefore estimate the logit regressions clustering standard errors by

[18] None of our results change if we also drop from the set of the potential matches the 512 companies that are financed by venture firms that invest only domestically.

[19] The effects of the control variables are largely similar to those they have the full sample, except for FOREIGN–DEAL, which becomes insignificant in the broad foreign subsample. This suggests that the negative effect in the main sample is largely driven by domestic investors. Put differently, among the purely international investors we find no significant home bias. FOREIGN–DEAL is not included in the narrow foreign subsample, which by construction contains only foreign deals.

[20] We also combine these two restrictions with excluding potential deals where the investor never invests abroad, and again find that our results are not affected.

[21] This is not an issue for the conditional logit model, which directly accounts for the interdependence of

company instead of country-dyad, and find that this does not reduce statistical significance levels. We also consider two-dimensional clustering, by company and investor, as suggested by Thompson (2006). We find again that this does not reduce the sign or statistical significance levels of any coefficient.

A few companies in our sample make multiple deals with different investors. Instead of conditioning the conditional logit model on individual companies, we can condition on individual deals. This even more fine-grained approach does not affect any of our results.

Our unit of analysis is the potential deal, but our key dependent variable, TRUST, varies at a higher level of aggregation, namely the country-dyad. Our base specification thus clusters by country-dyads. As an additional robustness check we aggregate the data to the level of the country-dyads. This involves a considerable loss of information, since we have to discard most of the micro-level information. Still, we consider a Poisson model where the dependent variable is the number of deals in each country dyad, and the independent variables are just the country-dyad controls. We find that the coefficient on trust continues to be statistically significant at the 1% level; using a negative binomial model yields similar results. This suggests that our key results hold irrespective of the unit of analysis used.

Some venture capital firms have multiple offices (Chen et el. (2010)). This affects our measure of effective distance from the companies. We therefore compute the minimal distance between each company and all (potential and actual) investors. We find that none of our results are affected.

The investment decision of a venture capital firm can respond to market conditions, in particular the number of entrepreneurs seeking funding. We conjecture that a firm receiving a high number of funding requests can afford to be pickier, i.e., such a firm is less likely to invest in any one company. In the short run, a venture capital firm's fund size is fixed (Sahlman (1990)), so that a higher solicitation rate makes it harder for any one company to receive funding from that venture firm. Cassiman and Ueda (2006) derive such a prediction in a model where the investor considers the option value of waiting. Our survey obtained information on how many business plans an investor has received each year. From this we construct a time-varying measure of the number of entrepreneurs soliciting funding from a specific venture capital firm ('solicitation rate'). When we include this variable in our main model, we find that its coefficient is always negative and largely significant. Moreover, our results for trust are confirmed.[22]

The prior social capital literature argues that trust among nations is related to the history of wars, to religious similarities, and even to genetic similarities (Guiso, Sapienza and Zingales (2009)). These variables have no obvious connection to venture capital investments, and their inclusion comes at the risk of over-specifying the model because they have been shown to be correlated with trust. Still, we confirm that the main effect of trust continues to hold even after controlling for these additional factors.

The venture capital industry is highly cyclical. Our data covers the period 1998-2001, so that the early sample comes from an upward cycle and the latter part from a down cycle. One may ask whether the effect of trust is stronger in boom or bust periods. To address this, we interact the trust variable with two dummies, one for the boom period (1998-

observations within groups.

[22] The only exception is that trust becomes marginally significant, with a p-value of 0.14, in the conditional (but not the ordinary) logit specification, and only in the broad foreign sample.

1999) and one for the bust period (2000-2001). In unreported regressions, we find that both coefficients continue to be positive and statistically significant. The boom coefficient is larger than the bust coefficient, but their difference is not statistically significant.

Finally, in case one still worries that there remain any unobserved peculiarities in our data that drive the results, we construct a falsification exercise. Instead of giving each investor and company its true country identity, we randomly assign a 'false' country identity. Based on these false identities, we also recalculate all the country-dyadic variables. The coefficient of TRUST in our main regressions becomes utterly insignificant, providing further reassurance that our main result is not an artifact of the sample, but reflects a real and robust economic phenomenon.

5 The role of trust for contracts

5.1 Methodology

The results from the previous section raise the question of whether contracts can overcome a lack of trust. In Section 2.3 we derived two competing hypotheses about the relationship between trust and contracts that we labeled the substitutes and complements hypotheses. Under the substitutes hypothesis investors require sophisticated contracts to compensate for a lack of trust. They believe that contracts are enforceable, but only incur the costs of writing sophisticated contracts when they perceive a need for it, namely when there is insufficient trust. Under the complements hypothesis, by contrast, investors question the enforceability of sophisticated contract. They are willing to incur the costs of writing a sophisticated contract only when they trust a nation, including its culture and institutions.

Our unit of analysis is the sample of realized deals. We examine four contingent control rights, pertaining to the composition of the board of directors, the allocation of voting rights, the decision to liquidate the company's assets, and the ability to terminate the founders' employment contract. These control rights all address major areas of potential conflict between investors and entrepreneurs (Sahlman (1990)). Contingent control rights are measured with dummy variables, so that we use a logit model (using a probit model does not change our results). We also create an index which counts the number of control rights used, for which we use a Poisson model. Formally, our econometric specification is given by:

$$Contract_r = \alpha + X_n'\beta^n + X_r'\beta^r + X_i'\beta^i + X_c'\beta^c + \varepsilon_p \tag{2}$$

where $r = (i, c)$ indexes the *realized* investor-company pairs. The dependent variables are CONTINGENT–RIGHTS–BOARD, CONTINGENT–RIGHTS–VOTING, CONTINGENT–RIGHTS–LIQUIDATION, and CONTINGENT–RIGHTS–TERMINATION, and their summary index, CONTINGENT–RIGHTS–INDEX. The X vectors represent the same variables as in equation (1), with one notable exception. Because the sample of realized deals is much smaller, adding investor fixed effect would over-specify the model. We therefore use a set of four control variables: INDEPENDENT–VC, VC–AGE, VC–SIZE, and investor country fixed effects.

5.2 Estimation results

Table 9 reports our findings. Each column represents a different dependent variable. The coefficient of TRUST is always positive and statistically highly significant in four out of five dependent variables, the exception being CONTINGENT–RIGHTS–BOARD. This result is not consistent with the 'substitutes' hypothesis, where contingent contracts are used to address lack of trust. Instead, it is consistent with the 'complements' hypothesis, where trust is a prerequisite for sophisticated contracting. This is a new and intriguing result.

To interpret the positive coefficient of trust on contractual sophistication, it is important to remember that we are measuring generalized trust, not personalized trust. Low trust does not mean that the investors distrust individual entrepreneurs—after all they are making an investment. Instead, what is driving the complements hypothesis is that with low generalized trust investors forgo sophisticated contracts, because they question the enforceability of these contracts in the first place.

Using this insight, we devise an additional test of the complements hypothesis that uses a difference-in-difference approach to examine how the relationship between trust and contingent contracts depends on legal enforcement. The regressions in Table 9 use company country fixed effects, thereby controlling (among other things) for differences in the company country's enforcement regime. We now investigate whether the effect of trust on contracting varies according to the strength of legal enforcement. We divide our sample into (company) countries with low versus high quality of contract legal enforcement using the rule of law index of La Porta et al. (1998) and the procedural complexity index of Djankov et al. (2002). Both of these indices have been extensively used in the literature to measure the quality of legal contract enforcement. The complements hypothesis emphasizes that before investors consider writing sophisticated contracts, they must first have a general confidence in their enforcement. We would therefore expect that the positive effect of trust is strongest in countries with higher standards of legal enforcement.[23] By contrast, the substitutes hypothesis posits that contingent contracts compensate for the lack of trust. We would therefore expect that the negative effect of trust is more pronounced in countries with low standards of legal enforcement, i.e., that the substitution effect is stronger when there is more to compensate for.

Table 10 reports the results of regressions equivalent of those reported in Table 9; in Panel A we interact trust with the rule of law index, and in Panel B with the index of procedural complexity. Consistent with the complements hypothesis, we find that trust has a stronger positive effect on contingent contracts in countries with better legal enforcement. With weaker legal enforcement, however, the effect of trust is often not even significant. These findings further reinforce the complements hypothesis.

[23] This formulation is also consistent with Gennaioli (2009), who develops a model in which judicial bias reduces the extent to which agents choose contingent contracts. The underlying idea is that the quality of the legal system affects uncertainty about enforcement. In his setting, the procedures and disclosures rules characterizing Common Law systems can reduce the ability of judges to base their decisions on ambiguous factors. This reduces the importance of judicial bias and fosters the adoption of contingent contracts.

5.3 Endogenous selection

Our interpretation of the main trust coefficient is based on examining variations in trust across a set of investments that are assumed to be otherwise comparable. Our fined-grained control variables give us some confidence in the assumption that those deals can be compared in terms of their observable characteristics. The question remains whether our results could be driven by selection on unobservables. For example, it could be that the only investments that are made in low trust situations are simpler, less risky deals that require fewer contingent control rights. Since we cannot observe the business nature of a deal, we could incorrectly attribute to trust what is in effect due to an (unobservable) selection effect.

To address concerns about selection on unobservables, we estimate a Heckman selection model. The selection equation is given by equation (1) and the outcome equation by equation (2). We explore two approaches and point out strengths and weaknesses of both. The fact that our results remain robust across both approaches provides at least some assurance that they are not driven by selection effects. Wooldridge (2002, ch. 17.4) provides a discussion of the merits and limits of either approach.

Our first approach uses the main specifications of the selection and outcome equations reported in Tables 4 and 8. Identification depends on the normality assumption and on the fact that the selection equation has more controls, because it uses investor fixed effects instead of the investor-country fixed effect used in the outcome equation. The strength of this approach is that no additional assumptions are made relative to the base model. The weakness is that the identification is driven by the econometric specification, rather than an economic exclusion restriction.

Our second approach addresses this weakness by augmenting the selection equation with variables that affect the selection equation, but that can reasonably be excluded from the outcome equation. Obviously one can always argue that any variable that affects deal formation also affects contracting. Our plausibility argument therefore relies on an interpretation that these variables, while demonstrably important for deal formation, are unlikely to still matter by the time that the entrepreneur and venture capitalist negotiate contractual terms.

We propose three identifying variables. The first two are EXPORTS and FDI. A high level of exports and FDI means that two countries are likely to have well-established networks for facilitating cross-country commercial transactions. Rauch (2001) suggest that trade flows are related to interpersonal networks. We argue that the presence of these cross-country institutional links facilitate the search process between entrepreneurs and investors. At the time of contracting, however, it is reasonable to assume that these trade-related institutional links no longer play an important role, i.e., they don't affect the kind of contracts entrepreneurs and investors agree upon. In Section 4.5 we noted that trade-related variables could over-specify the model, because EXPORTS and FDI are correlated with trust. Their inclusion could thus interfere with the coefficient estimate of trust in the selection equation. In the Heckman model this is less of a concern, since the main focus is the estimation of the trust coefficient in the outcome equation.

Our third identifying variable (SOLICITATION) measures the likelihood that a particular investor invests in a particular company in a particular year. In Section 4.7 we already showed that investment decisions depend on the number of entrepreneurs seeking

fund (the 'solicitation rate'). We now argue that while SOLICITATION matters in the selection equation, it is reasonable to exclude it from the outcome regression. This is because it seems unlikely that the details of the contract depend on the number of other entrepreneurs seeking funding.

Because of the large number of observations (over 100,000 in the selection equation) and control variables (including over 100 dummy variables), we can only achieve convergence in STATA by using the linear probability model (`heckman` instead of `heckprob`), and the two-step estimation procedure (which still achieves consistent estimates). Table 11 reports the results of the two Heckman selection models. Panel A reports results for the base model, and Panel B for the augmented model. For brevity, each Panel reports only the coefficient or TRUST in the selection equation of the base model, and the coefficient or TRUST and those of FDI, EXPORT, and SOLICITATION in the selection equation of the augmented model.

Table 11 shows that the coefficient of TRUST remains positive and statistically significant in both the base and augmented models. This is true for all equations (except for BOARD), suggesting that our previous findings are not affected by unobservable selection issues. We also find that the three identifying variables in the augmented model are highly significant and have the expected sign, i.e., higher exports and FDI increases the probability of a company being selected, whereas a higher solicitation rate decreases that probability. The estimates of Mills' λ are positive and significant in four out of ten equations (and insignificant in the others), suggesting that unobservable selection effects may affect contingent control rights, but that this is not a very strong effect. However, when selection occurs, it does not seem to interfere with the main effect of trust on contracting. For all augmented models we find that the coefficient estimates of all three excluded variables are statistically highly significant. Following Stock, Wright, and Yogo (2002), we also test the joint significance of our three instruments using the first-stage F-statistic. We find that the test exceeds the 5% critical value, supporting the relevance of our instruments. We also use all combinations of one or two of our excluded variables, and find that all the results remain valid.

5.4 Further robustness

In unreported regressions we perform further robustness checks for the realized deals sample. Similar to sections 4.4 to 4.7, we employ the socioeconomic measure of trust and the measure of trust from the company perspective. We add as regressors tourism, FDI, exports, and the Eurovision Song Contest measure; and we cluster standard errors at the investor instead of country-dyad level. We also use the minimal distance between each company and its investors to account for investments made by venture firms with multiple offices In all these cases we find that none of our results are affected.

Our main findings continue to hold in all of these cases. We also use, as an index to measure the quality of the legal system, the Corruption Perception Index (CPI) developed by Transparency International (www.transparency.org) in place of the rule of law and procedural complexity indices of Table 10. The CPI provides a measure of the institutional quality of a country, which could affect parties' willingness to adopt contingent contracts. The results remain fully consistent with those of Table 10.

Finally we check that the results for contracts do not depend on any single country, or

on the inclusion of deals with companies located in non-EU countries. We find that the trust coefficient is positive and statistically significant in most specifications, insignificant in very few specifications, and never negative and significant. In addition, building on our prior work (Bottazzi, Da Rin and Hellmann (2008, 2009)), we introduce controls for whether deals were syndicated, and whether the venture capital firm was the lead investor. Trust does not seem to explain the use of contingent liquidation rights but all other results remain unaffected.

6 Conclusion

Economists often distrust explanations that rely on subjective beliefs. Trust is a subjective belief, but so is economists' distrust of trust-based explanations. Hence the importance of empirically demonstrating the effect of trust.

No single paper can definitively establish the full economic importance of trust. The approach we take in this paper is to examine the effect of trust in a tightly defined environment, venture capital, where we can obtain micro level data. This has the advantage that we can safely dismiss concerns about reverse causality, and that we can control for a large number of alternative explanations. We find that trust has a significant effect on the investment decisions of venture capital firms, even after controlling for a host of other variables, including geographic controls, differences in information, languages and legal systems, and taste-based preferences. This holds even when we control for investor fixed effects and company country fixed effects, which accounts for any unobserved factors like the quality of national institutions, the ability, risk tolerance, and preferences of individual investors and the sectoral specialization of individual countries. We also find that the national composition of the venture partners who decide on an investment matters. Finally, we uncover evidence that the effect of trust extends beyond investment decisions and extends to how financial contracts are structured.

Our paper opens up further lines of research. For example, our results on the composition of partners inside a firm points to the importance of examining under which circumstances trust matters more (or less) for investment, and how the presence of heterogeneous agents can affect trust in teams. Another open question is the effect of trust on financial contracts. Our analysis is the first to tackle this issue, and suggests that trust and contractual sophistication are complements, not substitutes. Future research should examine in a more comprehensive manner how contracts are affected by trust.

The analysis also suggests some policy conclusion. Governments across the globe are seeking to attract venture capitalists to invest in their countries (Bottazzi and Da Rin (2002), Da Rin, Nicodano, and Sembenelli (2006)). Our results suggest that investments ought to be expected mostly from countries with well established trust for the recipient country. This provides some guidance as to what countries might be the most promising targets for government that want to attract foreign venture capital investments.

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Table 1: Variable definitions

Table 1(a): Dependent variables

Deal is measured at the potential deal level, the control rights variables at the (realized) deal level.

Variable	Description
DEAL	dummy variable that takes the value 1 if the venture capital firm has invested in a particular company; 0 otherwise. We obtain the data from our survey instrument, which asked venture firms to list all their portfolio companies.
CONTINGENT RIGHTS: BOARD	dummy variable that takes the value 1 if the venture capital firm reports to have included contingent board rights in the specific deal. We obtain the data from our survey instrument, which asked: *Does your firm has a right to obtain control of the board of directors contingent on the realization of certain events?* Possible answers were: *Yes, No.*
CONTINGENT RIGHTS: VOTING	dummy variable that takes the value 1 if the venture capital firm reports to have included contingent voting rights in the specific deal. We obtain the data from our survey instrument, which asked: *Does your firm has a right to obtain voting rights contingent on the realization of certain events?* Possible answers were: *Yes, No.*
CONTINGENT RIGHTS: LIQUIDATION	dummy variable that takes the value 1 if the venture capital firm reports to have included contingent liquidation rights in the specific deal. We obtain the data from our survey instrument, which asked: *Does your firm has a right to liquidate the company contingent on the realization of certain events?* Possible answers were: *Yes, No.*
CONTINGENT RIGHTS: TERMINATION	dummy variable that takes the value 1 if the venture capital firm reports to have included contingent termination rights in the specific deal. We obtain the data from our survey instrument, which asked: *Does your firm has a right to fire the founder/CEO contingent on the realization of certain events?* Possible answers were: *Yes, No.*
CONTINGENT RIGHTS: INDEX	index measure of contingent control rights obtained from summing over the four contingent control dummies. This variable takes a value between 0 and 4.

Table 1(b): Independent variables: Country-dyadic level

Country-dyadic variables are measured at the level of the investor country and company country pair.

Variable	Description
TRUST	percentage of the citizens in one contry that trust a lot people from the other country. It is obtained from the Eurostat's Eurobarometer question: *"I would like to ask you a question about how much trust you have in people from various countries. For each, please tell me whether you have a lot of trust, some trust, not very much trust or no trust at all."* The answers range from 1 (no trust at all) to 4 (a lot of trust). Our measure is the percentage of individuals who respond 4.
FOREIGN DEAL	dummy variable that takes value 1 if the investor and company are from different countries; 0 otherwise.
COMMON BORDER	dummy variable that takes value 1 if the investor's and company's countries share a land border; 0 otherwise (including domestic deals).
GDP DIFFERENCE	difference (for each country pair) of the log-transformed per capita GDP, expressed in euros and averaged over the 1998–2001 period. This variable is obtained from Datastream.
INFORMATION	percentage of times a country is mentioned in the other country's main business newspaper over the 1998-2001 period, obtained from the Factiva database. For each country dyad, we record the number of articles in the main business newspaper of country i that mention in the headlines country j, or citizens of country j. We divide this number by the total number of articles in the newspaper that are related to all the countries in our sample. We set INFORMATION equal to zero for domestic deals (i=j).
LANGUAGE OVERLAP	percentage of people who speak the same language in each country dyad. This variable is set to 1 for domestic deals. The data is obtained from www.ethnologue.com.
LEGAL DIFFERENCE	dummy variable that takes value 1 if investor and company are located in countries with different legal origins; 0 otherwise. We distinguish between Common law, French-origin civil law, German-origin civil law, and Scandinavian-origin civil law. The data is obtained from Laporta et al. (1998).
TOURISM	percentage of the nights spent for holiday purposes by citizens of country i at hotels in country j, out of the total holiday nights spent in the sample countries, averaged over the period from 1998 to 2001. This variable is set to 0 for domestic deals. The data is obtained from Eurostat.
EUROVISION	Normalized score of the votes from citizens of country i to the song of country j in the Eurovision Song Contest, computed as in Felbermayr and Toubal (2007), averaged over the period from 1993 to 2001. The data is obtained from the www.eurovision.tv website.
EXPORTS	percentage of the exports from country i to country j, out of the total export towards the sample countries, averaged over the period from 1998 to 2001. This variable is set to 0 for domestic deals. The data is obtained from the UN World Trade database.
FDI	percentage of the foreign direct investments from country i to country j out of the total FDI towards the sample countries, averaged over the period from 1998 to 2001. This variable is set to 0 for domestic deals. The data is obtained form OECD's Main Economic Indicators database.

Table 1(c): Other independent variables

Distance, Industry Fit, and Stage Fit are measured at the investor-company pair level. ALl other variables are measured at the company level.

Variable	Description
DISTANCE	natural logarithm of one plus the kilometric distance between the venture capital investor and the company. The distance is computed by applying the geodetic formula to the longitudinal and latitudinal coordinates of each investor and company pair. This data is obtained from www.multimap.com.
INDUSTRY	set of dummy variables for each company's industry. We obtain the data from our survey instrument, which gave the following choices: Biotech and pharmaceuticals; Medical products; Software and internet; Financial services; Industrial services; Electronics; Consumer services; Telecommunications; Food and consumer goods; Industrial products (including energy); Media & Entertainment; Other.
EARLY STAGE	dummy variable that takes value 1 if the company raised seed or start-up finance; 0 otherwise. We obtain the data from our survey instrument, which asked: *Indicate the type of your first round of financing to this company.* Possible answers were: *Seed; Start-up; Expansion; Bridge.*
INDUSTRY FIT	percentage of the deals made by the venture capital investor in the same industry of the company.
STAGE FIT	percentage of the deals made by the venture capital investor in the same stage at which the company gets financed.
SOLICITATION	Number of business plans received by each venture capital firm in each year between 1998 and 2001.
HIGH–RULE (LOW)	dummy variable that takes value 1 (or 0) if the company's legal system is above (below) the median level of the rule of law index from La Porta et al. (1998).
HIGH–PROCEDURAL (LOW)	dummy variable that takes value 1 (or 0) if the company's legal system is above (below) the median level of the procedural complexity index from Djankov et al. (2002). We rescale the index so that higher values correspond to a less formal legal system.
INVESTOR F.E.	set of 108 dummy variables, one for each investor.
COMPANY F.E.	set of 1,216 dummy variables, one for each company.
INDEPENDENT–VC	dummy variable that takes the value 1 if the venture capitalist defines itself as an independent venture firm; 0 otherwise
VC–SIZE	natural logarithm of one plus the amount under management of the venture capital firm at the end of the sample period, in millions of current euros.
VC–AGE.	natural logarithm of one plus the age of the venture capital firm, measured in months at the end of the sample period.
INVESTOR–COUNTRY F.E.	set of investor country dummy variables.
COMPANY–COUNTRY F.E.	set of company country dummy variables.

Table 1(d): Independent variables: Individual partner characteristics

Venture partner variables are measured at the level of the venture capital investor.

Variable	Description
PARTNER–MATCH	dummy variable that takes value 1 if the investor has at least one partner of the same nationality of the company; 0 otherwise.
PARTNER–TRUST	difference between the average trust in the company's country citizens of the investor's individual partners (based on their country of birth) and TRUST.
US–EXPERIENCE (NO–US–EXPERIENCE)	dummy variables that takes value 1 (or 0) if a venture capital investor has (or has not) partners with US work experience.
PHD (NO–PHD)	dummy variables that takes value 1 (or 0) if the venture capital investor has (or has not) partners with a doctoral degree.

Table 2
Descriptive statistics

This Table provides descriptive statistics for the potential and realized deal samples. We report the mean, minimum and maximum values of the dependent and independent variables (except for industry dummies). For dummy variables we report the frequency of observations. Variables are defined in Table 1.

	POTENTIAL DEALS SAMPLE			REALIZED DEALS SAMPLE		
VARIABLE	Mean	Minimum	Maximum	Mean	Minimum	Maximum
Deal	0.012	0	1	–	–	–
Control Rights: Board	–	–	–	0.386	0	1
Control Rights: Voting	–	–	–	0.342	0	1
Control Rights: Liquidation	–	–	–	0.317	0	1
Control Rights:Termination	–	–	–	0.323	0	1
Control Rights Index	–	–	–	1.296	0	4
Trust	0.204	0.037	0.716	0.434	0.071	0.716
Information	0.085	0	0.664	0.028	0	0.664
GDP Difference	0.106	0	0.618	0.056	0	0.283
Language Overlap	0.152	0	1	0.836	0	1
Legal Difference	0.178	0	1	0.872	0	1
Distance	6.720	0	9.322	3.829	0	9.176
Foreign Deal	0.893	0	1	0.180	0	1
Common Border	0.211	0	1	0.866	0	1
Industry Fit	0.144	0	1	0.365	0.017	1
Stage Fit	0.509	0	1	0.708	0.048	1
Early Stage	0.589	0	1	0.588	0	1
Tourism	0.083	0	0.401	0.013	0	0.400
Eurovision	0.334	–1.126	2.895	0.066	–0.440	2.723
FDI	0.083	0	0.693	0.032	0	0.456
Exports	0.093	0	0.469	0.021	0	0.469
Solicitation	0.441	0	2.617	–	–	–
Partner-Match	0.028	0	1			
Partner-Trust	0.001	–0.302	0.200			
US-Experience	0.548	0	1	–	–	–
PhD	0.361	0	1	–	–	–
High–Rule	–	–	–	0.372	0	1
High–Procedural	–	–	–	0.489	0	1
Independent-VC	–	–	–	0.602	0	1
VC-Size	–	–	–	4.486	1.300	4,100.000
VC-Age	–	–	–	97.742	12	390
Number of observations	*107,390*			*1,277*		
Number of companies	*1,216*			*1,216*		
Number of deals	*1,277*			*1,277*		
Number of venture firms	*108*			*108*		

Table 3: Correlations

This Table provides pairwise correlations (significance levels in brackets) among the country-dyadic variables defined in Table 1.

	Trust	Inform.	GDP Differ.	Lang. Overlap	Legal Differ.	Distance	Foreign. Deal	Common Border	Tourism	Euro-vison	Exports	FDI
Trust	1.000											
Information	–0.219 (0.00)	1.000										
GDP Diff.	–0.385 (0.00)	0.007 (0.03)	1.000									
Lang. Overlap	0.676 (0.00)	–0.199 (0.00)	–0.237 (0.00)	1.000								
Legal Differ.	–0.065 (0.00)	0.207 (0.00)	0.126 (0.00)	0.124 (0.00)	1.000							
Distance	–0.463 (0.00)	0.314 (0.00)	0.294 (0.00)	–0.529 (0.00)	0.017 (0.00)	1.000						
Foreign Deal	–0.724 (0.00)	0.314 (0.00)	0.209 (0.00)	–0.845 (0.00)	0.161 (0.00)	0.615 (0.00)	1.000					
Comm. Border	0.031 (0.00)	0.314 (0.00)	–0.098 (0.00)	–0.018 (0.00)	0.377 (0.00)	–0.128 (0.00)	0.179 (0.00)	1.000				
Tourism	–0.336 (0.00)	0.341 (0.00)	0.273 (0.00)	0.274 (0.00)	0.424 (0.00)	0.152 (0.00)	0.303 (0.00)	0.138 (0.00)	1.000			
Eurovision	-0.119 (0.00)	0.150 (0.00)	0.048 (0.00)	-0.189 (0.00)	0.101 (0.00)	0.115 (0.00)	0.181 (0.00)	0.196 (0.00)	-0.075 (0.00)	1.000		
Exports	–0.188 (0.00)	0.661 (0.00)	–0.045 (0.00)	–0.190 (0.00)	0.322 (0.00)	0.115 (0.00)	0.391 (0.00)	0.531 (0.00)	0.354 (0.00)	0.259 (0.00)	1.000	
FDI	–0.143 (0.00)	0.430 (0.00)	–0.037 (0.00)	0.001 (0.80)	0.208 (0.00)	0.235 (0.00)	0.260 (0.00)	–0.006 (0.00)	0.024 (0.00)	0.133 (0.00)	0.525 (0.00)	1.000

Table 4
The main model

This Table reports results of logit and conditional logit regressions with investor fixed effects for the potential deals sample. The dependent variable is DEAL. Variables are defined in Table 1. Company controls are complete sets of dummies for each company's country, industry and stage. Columns (i) and (ii) report results of logit regressions. Columns (iii) and (iv) report results from conditional logit regressions. All models are discussed in Section 4.1. For each independent variable, we report the estimated coefficient and the z-score (in parenthesis) computed using (Huber-White) heteroskedasticity-robust standard errors, clustered by country-dyad. Values significant at the 1%, 5% and 10% level are identified by ***, **, *.

	(i) Logit	*(ii)* Logit	*(iii)* Cond. Logit	*(iv)* Cond. Logit
Trust	7.157***	6.867***	7.127***	6.847***
	(4.69)	*(3.80)*	*(5.16)*	*(4.16)*
Information		4.080***		4.048***
		(3.29)		*(3.20)*
GDP Difference		–4.491**		–4.395**
		(–2.49)		*(–2.54)*
Language Overlap		0.742*		0.733
		(1.68)		*(1.35)*
Legal Difference		–0.164		–0.153
		(–0.57)		*(–0.50)*
Distance	–0.224***	–0.221***	–0.221***	–0.217***
	(–2.63)	*(–2.58)*	*(–5.78)*	*(–5.68)*
Foreign Deal	*–2.142****	*–1.524**	–2.112***	–1.506*
	(–3.92)	*(–1.91)*	*(–4.47)*	*(–1.93)*
Common Border	0.136	–0.280	–0.129	–0.284
	(0.49)	*(–1.03)*	*(–0.47)*	*(–1.01)*
Industry Fit	6.928***	6.963***	6.842***	6.874***
	(28.44)	*(28.46)*	*(23.28)*	*(24.02)*
Stage Fit	2.944***	2.972***	2.914***	2.240***
	(12.52)	*(12.78)*	*(16.95)*	*(17.10)*
Investor Fixed Effects	Included	Included	Included	Included
Company Controls	Included	Included	Included	Included
Observations	*107,390*	*107,390*	*107,390*	*107,390*
Pseudo R^2	*0.4995*	*0.5031*	–	–
Number of venture firms	*108*	*108*	*108*	*108*
Number of companies	*1,216*	*1,216*	*1,216*	*1,216*

Table 5
The effect of trust: the role of venture partners' nationality

This Table reports results of logit and conditional logit regressions with investor fixed effects that include measures of venture partner nationality. The dependent variable is DEAL. Variables are defined in Table 1. Control variables are those used in columns (ii) and (iv) of Table 4. Company controls are complete sets of dummies for each company's country, industry and stage. Columns (i) and (ii) report results of regression models which include PARTNER-MATCH, while columns (iii) and (iv) report results of regression models which include PARTNER-TRUST. These variables discussed in Section 4.3.1 and defined in Table 1. For each independent variable, we report the estimated coefficient and the z-score (in parenthesis) computed using (Huber-White) heteroskedasticity-robust standard errors, clustered by country-dyad. Values significant at the 1%, 5% and 10% level are identified by ***, **, *.

	(i) Logit	*(ii)* Cond. Logit	*(iii)* Logit	*(iv)* Cond. Logit
Trust	6.422***	6.409***	7.480***	7.450***
	(3.81)	(4.11)	(4.03)	(4.47)
Partner-Match	2.150***	2.130***		
	(4.12)	(3.99)		
Partner-Trust			8.849***	8.759***
			(4.06)	(3.00)
Control Variables	Included	Included	Included	Included
Investor Fixed Effects	Included	Included	Included	Included
Company Controls	Included	Included	Included	Included
Observations	*107,390*	*107,390*	*107,390*	*107,390*
Pseudo R^2	*0.5079*	–	*0.5059*	–
Number of venture firms	*108*	*108*	*108*	*108*
Number of companies	*1,216*	*1,216*	*1,216*	*1,216*

Table 6
The effect of trust: the role of education and experience

This Table reports results of variations of the logit and conditional logit regressions with investor fixed effects of the main model of Table 4, where we take into account the education and experience of venture firms' partners. The dependent variable is DEAL. Columns (i) and (ii) correspond to the specifications that include country dyadic variables in Table 4. For each specification we report the coefficient of TRUST interacted with the US–EXPERIENCE and PHD dummy variables, respectively. Variables as defined in Section 1. We do not report the coefficients of all other variables. For the interacted TRUST variables we report the coefficient and the level of significance; for each pair of coefficients we also report a Wald test for their difference and its p-value. Values significant at the 1%, 5% and 10% level are identified by ***, **, *.

	(i) Logit	*(ii)* Cond. Logit
US–Experience		
Trust*US–Experience	5.276***	5.266***
Trust*No–US–Experience	9.676***	9.653***
Wald test (p-value)	15.08*** (0.00)	11.16*** (0.00)
PhD		
Trust*PhD	5.970***	5.967**
Trust*No–PhD	8.169***	8.123***
Wald test (p-value)	4.72** (0.03)	3.00* (0.08)

Table 7
Additional models

This Table reports results of logit and conditional logit regressions with investor fixed effects and country dyadic variables for the potential deals sample. The dependent variable is DEAL. Variables are defined in Table 1. Company controls are complete sets of dummies for each company's country, industry and stage. Columns (i) and (ii), report results of specifications that include TOURISM, columns (iii) and (iv) report results of specifications that include EUROVISION, columns (v) and (vi) report results of specifications that include EXPORT, and columns (vii) and (viii) report results of specifications that include FDI. We report only the estimated coefficients for TRUST and the additional variable, and of their the z-score (in parenthesis) computed using (Huber-White) heteroskedasticity-robust standard errors, clustered by country-dyad. Values significant at the 1%, 5% and 10% level are identified by ***, **, *.

	(i) Logit	*(ii)* Cond. Logit	*(iii)* Logit	*(iv)* Cond. Logit	*(v)* Logit	*(vi)* Cond. Logit	*(vii)* Logit	*(viii)* Cond. Logit
Trust	7.306***	7.273***	7.093***	7.084***	5.551***	5.557***	6.784***	6.759***
	(3.62)	*(3.74)*	*(4.08)*	*(4.40)*	*(3.14)*	*(3.25)*	*(4.04)*	*(3.80)*
Tourism	–3.193*	–3.226*						
	(–1.82)	*(–1.65)*						
Eurovision			–0.182	–0.177				
			(–0.82)	*0.79)*				
Exports					10.836***	10.633***		
					(3.29)	*(3.18)*		
FDI							5.816***	5.751**
							(7.12)	*(4.79)*
Control Variables	Included	Included	Included	Included	Included	Included	Included	Included
Investor Fixed Effects	Included	Included	Included	Included	Included	Included	Included	Included
Company Controls	Included	Included	Included	Included	Included	Included	Included	Included
Observations	*97,736*	*97,736*	*99,977*	*99,977*	*107,390*	*107,390*	*101,638*	*101,638*
Pseudo R^2	*0.4961*	–	*0.5236*	–	*0.5055*	–	*0.5111*	–
Number of venture firms	*108*	*68*	*108*	*108*	*108*	*108*	*108*	*104*
Number of companies	*1,216*	*1,216*	*1,136*	*1,136*	*1,216*	*1,216*	*1,211*	*1,211*

Table 8
Foreign Subsamples

This Table reports results of logit and conditional logit regressions with investor fixed effects for the potential deals sample. The dependent variable is DEAL. Variables are defined in Table 1. The models and indepenedent variables correspond to those of columns (ii) and (iv) of Table 4. Columns (i) and (ii) report results for the broad foreign sample. Columns (iii) and (iv) report results for the narrow foreign sample. For each independent variable, we report the estimated coefficient and the z-score (in parenthesis) computed using (Huber-White) heteroskedasticity-robust standard errors, clustered by country-dyad. Values significant at the 1%, 5% and 10% level are identified by ***, **, *.

	(i) Logit	*(ii)* Cond. Logit	*(iii)* Logit	*(iv)* Cond. Logit
	Broad foreign subsample		Narrow foreign subsample	
Trust	6.149***	6.134***	8.367***	8.136***
	(2.94)	*(3.26)*	*(3.08)*	*(2.70)*
Information	4.138***	4.106***	4.399***	4.633***
	(3.02)	*(3.12)*	*(3.99)*	*(2.77)*
GDP Difference	–2.317	–2.281	–5.001**	–4.865**
	(–1.15)	*(–1.24)*	*(–2.25)*	*(–2.35)*
Language Overlap	0.984*	0.977	-1.497*	-1.455*
	(1.93)	*(1.62)*	*(-1.65)*	*(-1.74)*
Legal Difference	–0.075	–0.276	-1.020**	0.998**
	(–0.26)	*(–0.88)*	*(2.08)*	*(2.48)*
Distance	–0.143**	–0.141***	–0.416***	-0.166
	(–2.46)	*(–3.70)*	*(–5.24)*	*(-1.31)*
Foreign Deal	*–1.014*	*–0.998*	—	—
	(–1.16)	*(–1.21)*		
Common Border	-0.274	–0.277	–0.071	–0.074
	(-1.00)	*(–1.01)*	*(–0.20)*	*(–0.20)*
Industry Fit	6.554***	6.498***	6.808***	6.691***
	(23.84)	*(21.11)*	*(14.36)*	*(15.94)*
Stage Fit	2.859***	2.838***	2.697***	2.650***
	(12.29)	*(15.13)*	*(7.59)*	*(7.21)*
Investor Fixed Effects	Included	Included	Included	Included
Company Controls	Included	Included	Included	Included
Observations	*49,104*	*49,406*	*8,734*	*8,734*
Pseudo R^2	*0.4241*	–	*0.3323*	–
Number of venture firms	*49*	*49*	*49*	*49*
Number of companies	*1,216*	*1,216*	*223*	*221*

Table 9
Contingent control rights

This Table reports results of poisson and logit regressions for the sample of realized deals. Column (i) reports results of a Poisson regression whose dependent variable is CONTINGENT–RIGHTS–INDEX. Columns (ii) through (v) report results of logit regressions whose dependent variables are CONTINGENT–RIGHTS–BOARD, CONTINGENT–RIGHTS–VOTING, CONTINGENT–RIGHTS–LIQUIDATION, and CONTINGENT–RIGHTS–TERMINATION. Variables are defined in Table 1. Investor controls include a dummy for whether the venture firm is independent or captive (INDEPENDENT–VC), the venture firm's size (VC–SIZE) and age (VC–AGE), and investor country fixed effects. Company controls are complete sets of dummies for each company's country, industry and stage. For each independent variable, we report the estimated coefficient and the z-score (in parenthesis) computed using (Huber-White) heteroskedasticity-robust standard errors, clustered by country-dyad. Values significant at the 1%, 5% and 10% level are identified by ***, **, *.

	Contingent Rights: Index	Contingent Rights: Board	Contingent Rights: Voting	Contingent Rights: Termination	Contingent Rights: Liquidation
	(i)	*(ii)*	*(iii)*	*(iv)*	*(v)*
	Poisson	Logit	Logit	Logit	Logit
Trust	3.663***	9.440	20.714***	18.245**	10.222**
	(2.68)	(1.40)	(4.32)	(2.39)	(2.08)
Information	1.002	–2.299	0.852	4.829***	5.677***
	(1.39)	(–0.58)	(0.35)	(2.70)	(3.16)
GDP Difference	–0.264	–10.210	7.497	7.238	–4.933
	(–0.17)	(–1.53)	(0.94)	(1.44)	(–0.78)
Language Overlap	–0.164	–4.478***	2.477*	0.764	1.493
	(–0.38)	(–3.16)	(1.72)	(0.54)	(1.09)
Legal Difference	0.121	1.924*	–1.448	–0.564	–1.168
	(0.38)	(1.89)	(–1.37)	(–0.44)	(–1.17)
Distance	–0.014	0.031	–0.129***	–0.028	0.021
	(–0.82)	(0.88)	(–3.46)	(–0.80)	(1.00)
Foreign Deal	0.805	–1.823	8.142***	6.265*	4.743**
	(1.20)	(–0.75)	(3.63)	(1.76)	(2.00)
Common Border	–0.525**	–1.029	–0.467	–2.054**	–1.652**
	(–2.06)	(–1.19)	(–0.63)	(–2.52)	(–2.31)
Industry Fit	–0.073	0.772	–0.351	0.089	–0.722
	(–0.22)	(0.75)	(–0.47)	(0.11)	(–0.92)
Stage Fit	–0.011	0.972	–0.108	0.262	–0.894*
	(–0.04)	(1.36)	(–0.22)	(0.27)	(–1.94)
Investor Controls	Included	Included	Included	Included	Included
Company Controls	Included	Included	Included	Included	Included
Observations	1,131	1,120	1,044	1,045	1,046
Pseudo R^2	–	0.292	0.328	0.240	0.239

Table 10
Trust and the quality of legal enforcement

This Table reports results of variations of the logit and poisson models of Table 9, where the effect of trust takes different values for investment in countries with high/low values of the rule of law and procedural complexity indices. Dependent variables are: CONTINGENT–RIGHTS–INDEX, CONTINGENT–RIGHTS–BOARD, CONTINGENT–RIGHTS–VOTING, CONTINGENT–RIGHTS–LIQUIDATION, and CONTINGENT–RIGHTS–TERMINATION. Variables are defined in Table 1. In each column we report two coefficients, corresponding to the effect of trust interacted with a dummy for a high/low value of the legal enforcement index. Investor controls include a dummy for whether the venture firm is independent or captive (INDEPENDENT–VC), the venture firm's size (VC–SIZE) and age (VC–AGE), and investor country fixed effects. Columns (i) through (v) report results of regressions corresponding to those in Table 9, without reporting the coefficients of the other dependent variables. For each estimated coefficient of trust interacted with the legal enfocement dummy, we report the coefficient and the level of significance; for each pair of coeffiecients; we also report a Wald test for their difference and its p-value. Values significant at the 1%, 5% and 10% level are identified by ***, **, *.

	Contingent Rights: Index	Contingent Rights: Board	Contingent Rights: Voting	Contingent Rights: Termination	Contingent Rights: Liquidation
	(i)	*(ii)*	*(iii)*	*(iv)*	*(v)*
	Poisson	Logit	Logit	Logit	Logit
Panel A: Rule of Law					
Trust*Low–Rule	1.885	1.279	19.950***	16.358*	5.832
Trust*High–Rule	5.361***	12.052***	30.434***	18.299**	12.179***
Wald $\chi^2(1)$ (p-value)	11.85*** (0.00)	9.42*** (0.00)	3.11* (0.07)	0.29 (0.59)	2.81* (0.09)
Panel B: Procedural Complexity					
Trust*Low–Procedural	2.320*	7.537	20.420***	15.414*	4.862
Trust*High–Procedural	4.881***	12.526**	28.271***	17.509**	11.456**
Wald $\chi^2(1)$ (p-value)	7.24*** (0.00)	1.56 (0.21)	1.53 (0.22)	0.58 (0.44)	3.19* (0.07)

Table 11
Heckman selection model

This Table reports results of linear two-step Heckman regressions. Columns (i) through (v) report results of regressions whose dependent variables are variables are: CONTINGENT–RIGHTS–INDEX, CONTINGENT–RIGHTS–BOARD, CONTINGENT–RIGHTS–VOTING, CONTINGENT–RIGHTS–LIQUIDATION, and CONTINGENT–RIGHTS–TERMINATION. All variables are defined in Table 1. Panel A uses the base model, with no excluded variables. Panel B uses the augmented model, with three excluded variables. At the bottom of Panel B we report an F-test for the joint significance of the three instrumental variables. The model specification for the outcome equation is the same as in Table 9. Investor controls include a dummy for whether the venture firm is independent or captive (INDEPENDENT–VC), the venture firm's size (VC–SIZE) and age (VC–AGE), and investor country fixed effects. Company controls are complete sets of dummies for each company's country, industry and stage. In Panel A the model specification for the selection equation is the same as in column (ii) of Table 4; in Panel B it includes FDI, EXPORTS, and SOLICITATION. We report only the coefficients of TRUST and (for Panel B) of FDI, EXPORTS, and SOLICITATION. For each independent variable, we report the estimated coefficient and the z-score (in parenthesis) computed using (Huber-White) heteroskedasticity-robust standard errors, clustered by country-dyad. Values significant at the 1%, 5% and 10% level are identified by ***, **, *.

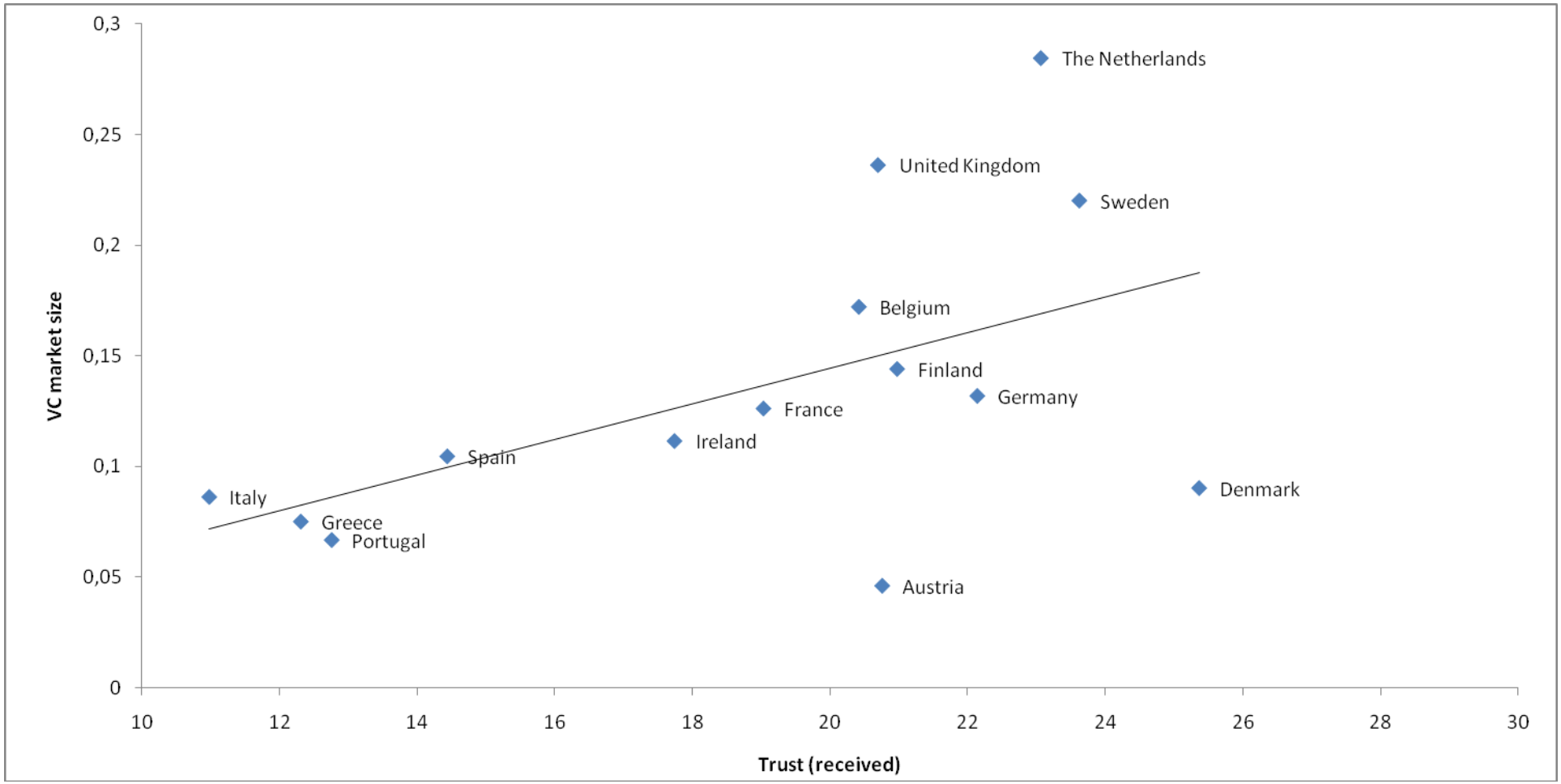
Panel A: BASE MODEL

	Contingent Rights: Index (i)	Contingent Rights: Board (ii)	Contingent Rights: Voting (iii)	Contingent Rights: Termination (iv)	Contingent Rights: Liquidation (v)
Trust	6.679***	1.125	2.476***	2.546***	1.508**
	(3.64)	(1.63)	(3.70)	(3.68)	(2.19)
Information	1.381**	–0.041	–0.126	0.922**	1.154***
	(2.16)	(–0.11)	(–0.35)	(2.52)	(3.18)
GDP Difference	–1.055	–1.078	0170	0.159	–0.171
	(–0.53)	(–1.43)	(0.23)	(0.22)	(–0.23)
Language Overlap	0.260	–0.469**	0.315*	0.216	0.239
	(0.53)	(–2.52)	(1.80)	(1.18)	(1.32)
Legal Difference	–0.256	0.160	–0.215*	–0.111	–0.134
	(–0.75)	(1.24)	(–1.76)	(–0.88)	(–1.07)
Distance	–0.051***	0.002	–0.024***	–0.023***	–0.006
	(–2.84)	(0.25)	(–3.71)	(–3.37)	(–0.89)
Foreign Deal	1.781**	–0.223	1.002***	0.690**	0.561*
	(2.16)	(–0.72)	(3.38)	(2.24)	(1.84)
Common Border	–0.582**	–0.120	–0.048	–0.257**	–0.256**
	(–2.15)	(–1.18)	(–0.50)	(–2.52)	(–2.52)
Industry Fit	0.448*	0.166*	0.006	0.286***	0.41
	(1.90)	(1.89)	(0.06)	(3.24)	(0.48)
Stage Fit	0.430**	0.221***	0.083	0.227***	–0.38
	(2.49)	(3.42)	(1.36)	(3.50)	(–0.60)
Investor Controls	Included	Included	Included	Included	Included
Company Controls	Included	Included	Included	Included	Included
			SELECTION EQUATION		
Trust	3.143***	3.138***	2.798***	3.057***	3.076***
	(6.23)	(6.22)	(5.37)	(5.93)	(6.04)
Investor FE	Included	Included	Included	Included	Included
Control Variables	Included	Included	Included	Included	Included
Mills λ	0.391**	0.050	0.055	0.212***	0.112***
	(3.54)	(1.21)	(1.36)	(5.12)	(2.75)
Observations	*107,388*	*107,388*	*107,388*	*107,388*	*107,388*
Realized deals	*1,131*	*1,129*	*1,091*	*1,103*	*1,124*
Wald $\chi^2(54)$	*651.13*	*531.20*	*660.13*	*420.71*	*427.48*

Panel B: AUGMENTED MODEL

	Contingent Rights: Index (i)	Contingent Rights: Board (ii)	Contingent Rights: Voting (iii)	Contingent Rights: Termination (iv)	Contingent Rights: Liquidation (v)
Trust	7.646***	1.024	3.125***	2.846***	1.764**
	(3.34)	(1.17)	(3.92)	(3.28)	(2.13)
Information	1.019	0.460	–0.519	1.436**	0.768
	(0.62)	(0.73)	(–0.91)	(2.34)	(1.31)
GDP Difference	1.197	–0.660	0.485	0.291	1.866
	(0.37)	(–0.52)	(0.42)	(0.24)	(1.58)
Language Overlap	0.934	–0.320	0.437***	0.511**	0.432*
	(1.51)	(–1.36)	(2.09)	(2.23)	(1.97)
Legal Difference	–1.014**	0.141	–0.465***	–0.309*	–0.494***
	(–2.21)	(0.81)	(–2.97)	(–1.82)	(–3.04)
Distance	–0.010	0.010	–0.011	–0.005	0.001
	(–0.52)	(1.45)	(–1.64)	(–0.75)	(0.05)
Foreign Deal	2.821***	–0.146	1.516***	1.080***	0.817**
	(2.83)	(–0.37)	(4.26)	(2.78)	(2.20)
Common Border	–0.741*	–0.321**	0.098	–0.378**	–0.297**
	(–1.82)	(–2.05)	(0.71)	(–2.45)	(–2.02)
Industry Fit	0.058	0.040	–0.162*	0.120	0.048
	(0.22)	(0.39)	(–1.83)	(1.23)	(0.51)
Stage Fit	0.134	0.098	0.074	0.096	–0.082
	(0.70)	(1.33)	(1.29)	(1.35)	(–1.20)
Investor Controls	Included	Included	Included	Included	Included
Company Controls	Included	Included	Included	Included	Included
			SELECTION EQUATION		
Trust	2.822***	2.817***	2.446***	2.730***	2.676***
	(3.35)	(3.77)	(3.17)	(3.55)	(3.50)
FDI	1.629***	1.627***	1.137**	1.629**	1.617***
	(3.78)	(3.78)	(2.52)	(3.77)	(3.76)
Exports	3.784***	3.781***	3.592***	3.626***	3.709***
	(3.35)	(3.35)	(3.16)	(3.20)	(3.28)
Solicitation	–0.215***	–0.214***	–0.216***	–0.215***	–0.216***
	(–3.70)	(–3.70)	(–3.70)	(–3.72)	(–3.73)
Investor FE	Included	Included	Included	Included	Included
Control Variables	Included	Included	Included	Included	Included
Mills λ	0.106	0.017	–0.053	0.069	0.076*
	(0.89)	(0.38)	(1.28)	(1.56)	(1.79)
Observations	*81,993*	*81,993*	*81,993*	*81,993*	*81,993*
Realized deals	*886*	*884*	*852*	*868*	*879*
Wald $\chi^2(52)$	*683.74*	*428.95*	*780.64*	*400.93*	*448.25*
F statistic (3)	54.*34*	*54.26*	*38..25*	*52.29*	*53.49*

Figure 1: Trust and VC market size



This figure shows the relationship between countries' trust and the size of their venture capital market. Each observation represents a country in our dataset. Trust (received) is the average percentage of people who expressed high trust in the Eurobarometer data. A value of 20 means that on average 20% of people expressed high trust. VC market size is measured as the total venture capital investments divided by the country's per-capita GDP, for the period 1998-2001.